

# The American FERTILIZER

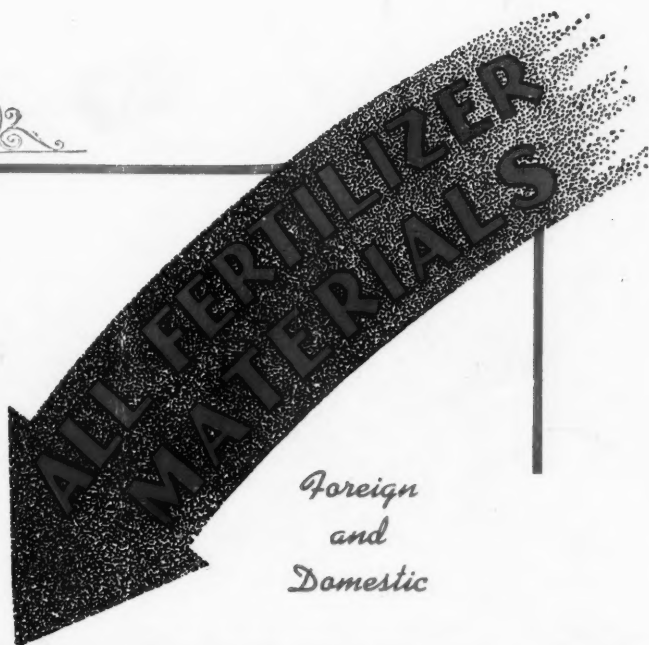


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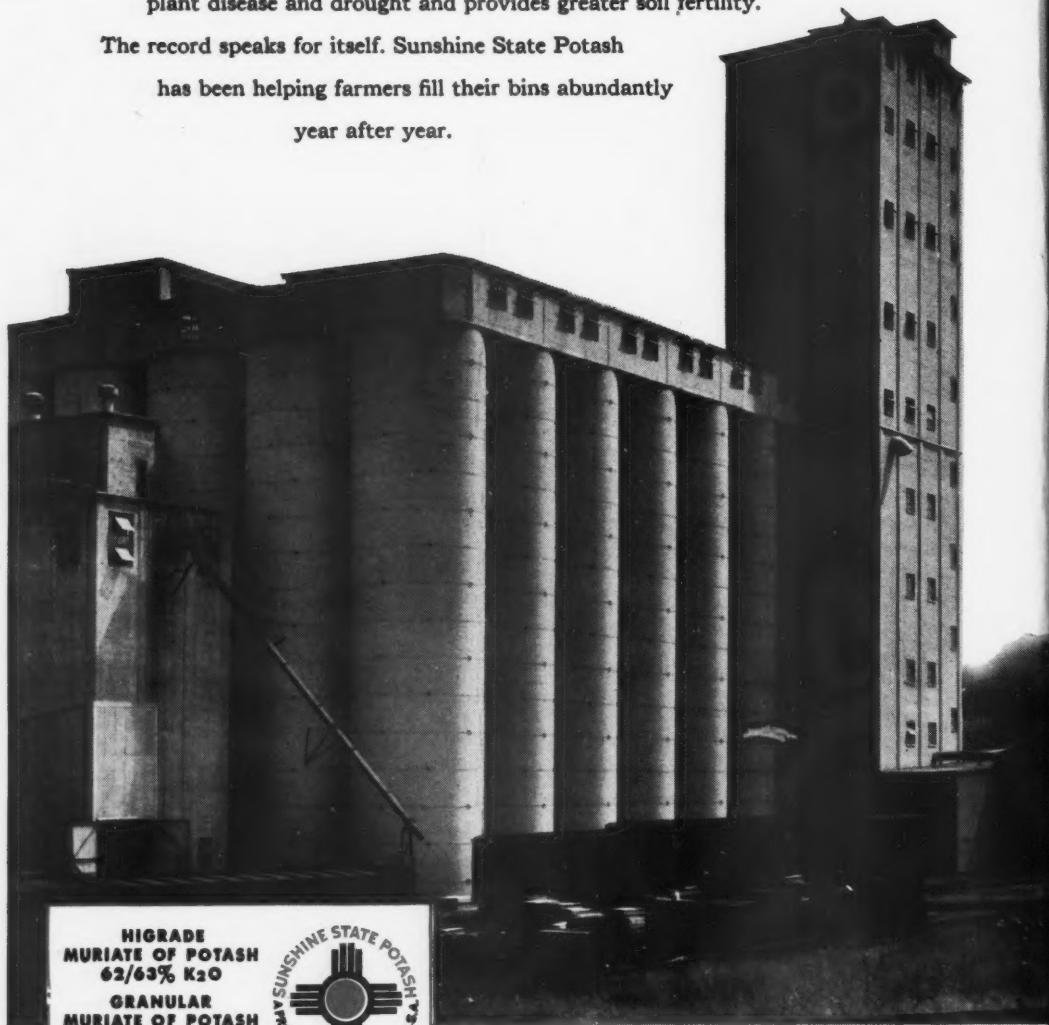
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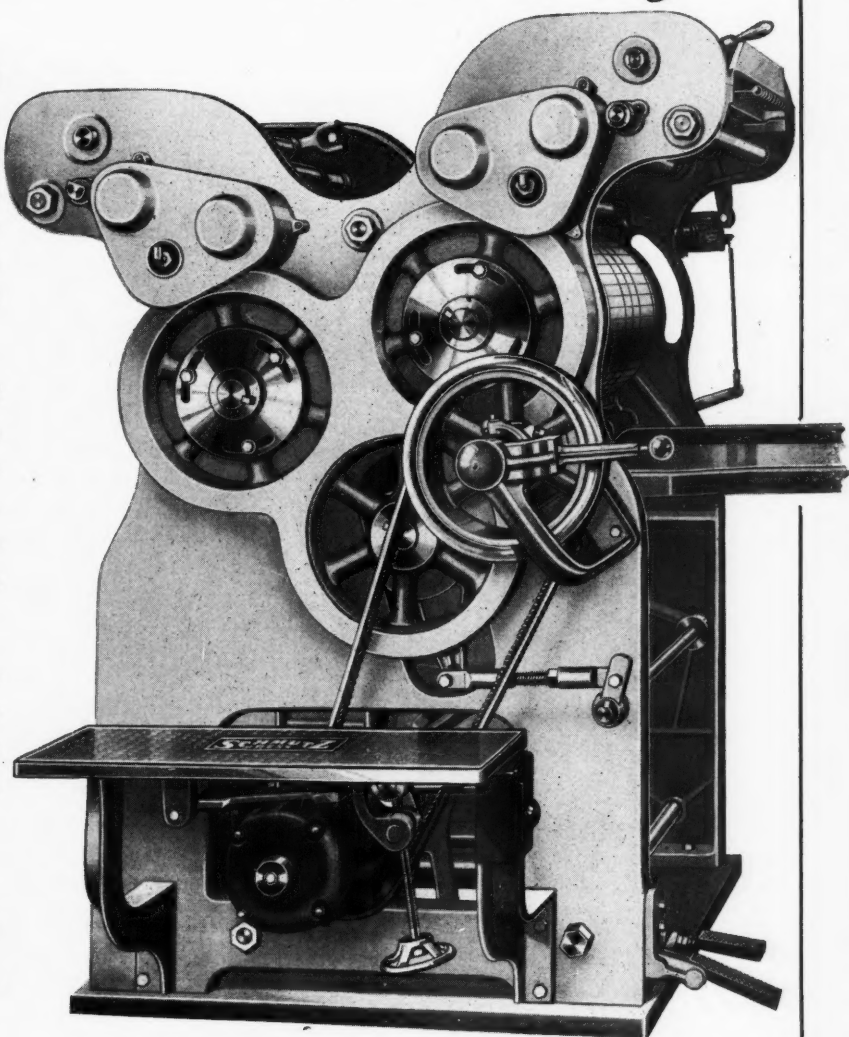
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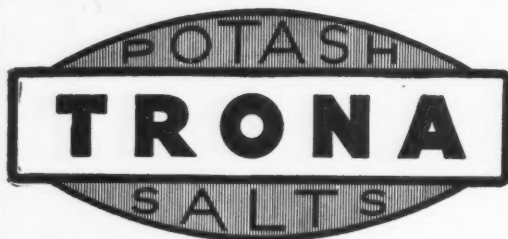
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See page 27





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... THE ...

# AMERICAN FERTILIZER

"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

Vol. 104

JANUARY 12, 1946

No. 1

## New Fertilizer Bill in Congress

**Representative Kefauver of Tennessee Proposes Two New Government Fertilizer Plants in TVA Territory. Bill Covers Phosphate Production Only.**

**A**NOTHER bill to put the government in the fertilizer manufacturing business has been introduced in the House of Representatives by Representative Estes Kefauver, of Tennessee. His measure (H. R. 5074) is not as comprehensive as the Hill-Bankhead-Flanagan bill (S. 882) which is now pending before the House Committee on Agriculture. The Kefauver bill is limited in its scope principally to the southeastern section of the country and covers the production and distribution of phosphatic fertilizers only. The construction specified covers the TVA plant at Mobile, Ala., which was proposed in the previous Hill bill, and another plant in Tennessee to cost not more than \$20,000,000.

The bill has been referred to the Committee on Military Affairs since that committee has jurisdiction over all measures pertaining to TVA. The chairman of this committee, Rep. Andrew May, of Kentucky, has long been an opponent of TVA and the progress which the bill will make is problematical.

It is the purpose of the Kefauver bill, in order to provide for the common defense and general welfare of the United States, to provide for the formulation and development of a national fertilizer policy and program; as a step in said program, to provide for the acquisition of adequate phosphate reserves in the State of Florida for the phosphate plant heretofore authorized to be constructed by TVA near Mobile, Ala., and for "another fertilizer plant, the construction of which is hereby authorized, said additional plant to be constructed by the TVA in the territory of the Tennessee valley and to cost not more than \$20,000,000"; as part of said program, to specify certain policies for the operation of the

plants by TVA and to provide a basis for the operation of the plants by a bona fide farmer cooperative organization.

TVA is directed to report to Congress within six months a national fertilizer policy and program designed to increase the amount of fertilizer available to farmers, to improve its quality, and to lower its cost in the interest of national defense, agricultural development, and watershed protection. Due consideration is to be given to ways and means of establishing plants for the utilization of the Western phosphate potash deposits on the public domain and the Florida phosphate reserves, and of providing for the use of surplus War Department nitrogen plants, for the manufacture of nitrogenous fertilizers and materials for agricultural purposes and munitions for war purposes. Particular attention would be devoted to devising a system of distribution which would insure the availability of these fertilizers and materials to farmers at prices commensurate with the costs of manufacture and distribution.

To provide an economical source of raw materials and to conserve the already depleted Tennessee phosphate deposits, TVA is authorized to acquire by purchase, lease, or otherwise, sufficient strategically located phosphate lands in the Florida fields to supply the authority's plants for a fifty-year period. TVA is authorized to operate the two plants for an interim period of five years and use 50 per cent of the estimated production to augment its farm test demonstration program and to sell the remainder, giving preference to farmer cooperatives as buyers.

After the five-year period of TVA operation the plants would be leased to farmer



cooperative organizations for terms up to fifty years, with the understanding that they would continue to be used for production of fertilizers of phosphatic materials, and that at least 50 per cent of the production would be distributed through farmer cooperatives. The rent paid for the plants would be fixed "at such amount as appears suitable to carry out the intents and purposes of this act."

### SPA Reports on War Ammonia Plants

In making a report to Congress on December 20th, the Surplus Property Administration declared that present prospects for disposition of the government's synthetic ammonia war plants "permit a reasonable expectation of meeting the USDA program" for production of 250,000 tons of nitrogen annually in excess of TVA output. The administration also stated that prospective purchasers or lessees of the ammonia plants have evinced no interest in acquiring graining facilities for installation in their plants, because they prefer to install new equipment specially designed to produce the free-flowing type of ammonium nitrate that is essential to fertilizers.

The disposal status of individual plants is described as follows:

*Missouri Ordnance Works, Louisiana, Mo.* Not available to fertilizer nitrogen program; retained by Army as stand-by; has been turned over to Bureau of Mines for experimental purposes in connection with synthetic liquid fuel program of Department of Interior.

*Morgantown Ordnance Works, Morgantown, W. Va.* War Department holding plant in stand-by condition, likely to make it available for lease for commercial purposes under restrictions.

*Ozark Ordnance Works, El Dorado, Ark.* Now operated under wartime lease by Lion Chemical Company; interest in acquisition of plant has been expressed by number of companies, including present operator.

*Jayhawk Ordnance Works, Jayhawk, Kans.* Now operated under wartime lease by Military Chemical Company; negotiations for lease of a substantial part of plant to wartime operator now at an advanced stage.

*Ohio River Ordnance Works, West Henderson, Ky.* Wartime operator was Atmospheric Nitrogen Company. Because plant is a high cost producer, no interest has been shown in operating it beyond local desire to acquire the power plant.

*Dixie Ordnance Works, Sterlington, La.* Wartime operator, Commercial Solvents Corporation; some interest shown by chemical companies in acquisition, in one case at least, for conversion to methanol manufacture; no strong interest in acquisition for production of industrial or fertilizer nitrogen derivatives.

*Buckeye Ordnance Works, South Point, Ohio.* Now under 10-month lease to wartime operator, the Atmospheric Nitrogen Company, a subsidiary of Allied Chemical & Dye Corporation, which has submitted proposal for a five-year lease.

*Cactus Ordnance Works, Dumas, Texas.* Wartime operator, Shell Chemical Company; interest in acquisition solely to secure equipment, since plant is apparently uneconomically located for post-war operation.

*Defense Plant Corporation Plant, Mathieson Alkali Company, Lake Charles, La.* An interest in acquisition shown by three companies including wartime operator.

### The 1946 Fertilizer Outlook for Michigan

The 1946 fertilizer outlook for Michigan farmers is presented by Dr. C. E. Millar, head of the Michigan State College soil science department. This report is the result of a recent conference on the college campus of division managers and field representatives of companies selling fertilizer in Michigan.

1. The same grades of fertilizer will be recommended and offered for sale this year as in 1945, with the exception that 0-6-18 is removed from the list.

2. Supplies of superphosphate of regular grades will be somewhat greater than during the past year. Production of the treble superphosphate or 45 per cent superphosphate will still be below what is needed. This means that mixed fertilizer grades of higher plant food content cannot be increased to any extent.

3. Prospects indicate an adequate supply of ammonium nitrate for use on fruits and vegetables. Because of the decrease in steel manufacture, supplies of sulphate of ammonia will be short, and hence, the manufacture of grades containing a high percentage of nitrogen may be restricted.

4. Although more potash will be mined this year than in 1945, limitations in transportation are preventing it from being moved rapidly to the factories.

Farmers intending to use fertilizer this year are urged by Dr. Millar to place their orders as soon as possible to assure themselves fertilizer when they must have it.

# What Is the Best Method of Applying Fertilizer?\*

By GEORGE R. COBB

Salisbury, Maryland

**I**N HIS *Farmer's Manual* written in 1819, Frederick Butler has this to say in regard to successful farming: "We are all sensible that two great evils have uniformly obstructed the attainment of this great objective; the one is where the farmer runs too hastily into new and visionary schemes and the other when he adheres too obstinately to such old practices as are obviously bad."

Farmers have not changed much during the 125 years since his book was written, for they rushed into band placement too fast and without sufficient evidence that this method would work on their soils, their crops, and under their conditions, and as a result many band-placement machines are now rusting away under sheds or behind barns. In the past two or three years farmers have followed the same headlong rush to apply fertilizers on the plow sole or bottom of the furrow.

## Changing Methods

It is true that methods of applying fertilizers are changing and today more farmers are plowing under fertilizer. Tomato growers in Delaware who contract with Libby, McNeil, and Libby are turning to plowing under the fertilizer because one year two of the first three prize-winners followed this method in growing their prize crops. In New Jersey in 1940, according to Dr. Tiedjens, not more than 1 per cent of the tomato growers plowed under the fertilizer despite the fact that the Department of Vegetable Gardening had recommended this practice since 1936. Since 1941 the number of growers following this INSERT footnote—Reprinted from etc—practice has rapidly increased so that by 1944 approximately 50 per cent of the growers are plowing under all or part of the fertilizer. Reports from other states confirm this trend, but as with the other methods of applying fertilizer plowing under has its drawbacks as well as its good points.

At the 1944 annual meeting of the Vegetable Growers of America Dr. H. C. Thompson of Cornell reviewed and analyzed the experi-

ments in placing fertilizer as reported by the Joint Committee on Fertilizer Application and concluded from this study that no one method was best under all conditions. He compared six different methods of applying fertilizer—broadcast before plowing, broadcast after plowing, applied in bottom of furrow, applied in bands, part of fertilizer in furrow and remainder in bands, and drilling in the fertilizer three to four inches deep. Professor C. B. Sayre in reporting for the Northeast confirmed Dr. Thompson's conclusion that in such a large number of experiments, conducted under exceedingly different conditions of soil, rate, and kind of fertilizer, it is impossible to make any general recommendation for all types of conditions. However, Professor Sayre does say that generally speaking it appears that on the heavier types of soils the results are inclined to favor deep applications, particularly plowed-under; while on light soils more shallow applications, such as the band method or side-dressings, are indicated. When small amounts of fertilizer are applied, the band method seems to give the best results.

The plow-under method of applying fertilizer when applied before plowing would seem to be best on heavy soils and in dry seasons, but with soils low in pH the fixation of phosphorus is greater under this method than when the fertilizer is placed in bands or in the furrow. In a report from New York State, 800 lbs. of fertilizer broadcast and plowed under yielded but 4.82 tons of tomatoes per acre as compared with a yield of 7.91 tons when the fertilizer was applied half in the furrow and half in bands. This soil had a pH of only 4.8, thus the heavy fixation of P when broadcast. Professor Sayre explains this by saying that on very acid soils with a high capacity for fixing P, fertilizer applied in bands or on the furrow bottom is exposed to less soil surface and thus the fixation is less than when broadcast and plowed down. But he continues, "On the other hand, on soils not having such a high fixation capacity, the band or furrow method did not show any advantage over the other methods of applying the fertilizer."

\*Reprinted from *Better Crops with Plant Food*, November, 1945.

Dr. J. B. Hester, Campbell Soup Company, recommends on medium and heavy soils that the nitrogen should be plowed down or disked in or the N and K plowed under with P in the row or all plowed under and a starter solution should be used. He further advises that on very light soils, for tomatoes, there is a question about plowing down the nitrogen as so much may leach that the plants will lack this element before the season is ended. Good results have been obtained on well-limed soils by plowing down or disking from 1,000 to 2,000 lbs. of a 5-10-10 or 4-8-8 fertilizer. In 1939, those growers who placed high nitrogen in the row raised but eight tons of tomatoes per acre while those who put the same amount on broadcast or applied it as a side-dressing got an average yield of 15 tons per acre. Dr. Hester sums up the question as follows: (1) apply potash, a small amount in the row and the rest as a side-dressing; (2) apply the bulk of the fertilizer broadcast and disk or plow under before the plants are set with some in the row at planting time on heavy soils; (3) pre-fertilize the cover crop; and (4) use proper systems of band placements.

Broadcasting the fertilizer after plowing would seem to be the least preferred method. Dr. Thompson found in his survey that this method gave a larger number of lower yields than any other method, and it was especially poor on heavy soils. However, this method was very good on sandy loams. There is likely to be more fixation under this method when small amounts of fertilizer are applied, and in dry seasons this practice has given very poor results. It is, nevertheless, one of the safest methods of applying large amounts of fertilizer to light, well-drained soils, but for best results should be combined with one of the other methods.

#### Results of Furrow Application

Applying all of the fertilizer in the bottom of the furrow produced more low yields than any other method. Reports from New York State on tomatoes indicate that 800 lbs. in the bottom of the furrow gave the lowest yields of the six methods tested, but when 400 lbs. were placed in the furrow and 200 lbs. in bands, the yield was the highest of all methods tested. This method of placing the fertilizer in the furrow bottom is better in dry seasons than applying it on the surface, and there is less fixation of P and K under this method. As it takes some time for the roots to reach the fertilizer when placed in the furrow bottom, it is advised that either a

starter solution be used or a small amount of fertilizer be placed in the row, in the hill, or in bands close to seed. From New Jersey comes the report that when only P was placed deeply and N and K were side-dressed, the yields were as good, if not better, than when the complete fertilizer was placed in the subsoil.

In growing peas for canning, Maryland found that placing the fertilizer in bands about one and one-half inches from the seed gave better results than when the fertilizer was applied in the bottom of the furrow. Similar results were secured in Michigan, but in this case the fertilizer placed in bands but one-half inch from the seed gave best results. On the other hand, Dr. Frank App of the Seabrook Farms recommends at least 1,000 lbs. of fertilizer per acre with the suggestion that both the fertilizer and lime should be applied early in the spring before plowing. Seaton of the Continental Can Company advises drilling in the fertilizer three to four inches deep. Jesse Huffington of Pennsylvania State College sums up the recommendations for applying fertilizer to peas in this manner: "Pea growers in Pennsylvania have found that on soils low in fertility plowing down is probably the best method, but on fertile, well-limed soils fertilizers drilled deeply have come out ahead every time."

The band-placement method, which received so many plaudits a few years ago, is now found not a cure-all nor the one perfect method. Some experts feel that by placing the fertilizer in bands they have eliminated the danger from injury, but Dr. Mahoney of the University of Maryland reports that in 1941 when it was very dry at planting time and for three weeks after there was a heavy loss of plants due to fertilizer toxicity when the fertilizer was applied in bands. With the band method the fertilizer is placed so that the roots can reach it easily and there is less fixation than with some of the other methods, but it should be used cautiously when large amounts of fertilizer are applied per acre. When over 500 lbs. of a fertilizer such as a 5-10-5 or 4-12-4 are applied, Dr. Thompson suggests that the band method should be combined with some other method so as to lessen the danger from injury to the plants or seed. As stated above, many pea growers have found that placing the fertilizer in bands has given the best results. There is, apparently, more danger when the fertilizer is applied in bands on sand or sandy loams than when the same method is followed on silt loams, clay loams, or mucks.

(Continued on page 28)

## International Buys New Phosphate Property

Negotiations have been completed for the purchase by International Minerals and Chemical Corporation of a phosphate rock deposit near Bartow, Florida, which will be developed into the largest and most modern phosphate mining operation in the United States, according to a statement by Louis Ware, president of the corporation.

The property is being purchased from an organization known as W. H. Stuart, Trustee, of Bartow, Florida, and approximately 2,000 acres of land are involved in the deal. This acquisition will increase International's output of phosphates to meet the growing demand for domestic and export needs, according to Mr. Ware.

Before ocean shipping was stopped by the war, Florida phosphate mines shipped about one million tons each year to European and Far Eastern markets. During the war little phosphate was available to foreign countries. Therefore, their soils have become depleted and are in urgent need of this material. "Demand for phosphate for export is expected to continue high for many years," Mr. Ware said.

Purchase of this property was negotiated on behalf of International Minerals and Chemical Corporation by Franklin Farley, vice-president in charge of the phosphate division of the corporation, who said that it is planned to design immediately and construct a phosphate mine operation that will have a life of more than 25 years and which is expected to yield the greatest annual tonnage of high-grade phosphate rock ever mined from a single operation, the project being highly mechanized and designed for highest efficiency and lowest cost production.

When this development is placed in operation, phosphate rock will be shipped by rail from Bartow to Mulberry, Florida, present center of the corporation's phosphate mining activities in Florida, where it will be graded, dried, stored and distributed to manufacturing outlets.

In discussing some of the mechanical features of the corporation's phosphate mining activities in Florida, Mr. Farley stated that International now has received delivery of the largest dragline excavator ever built. It is being assembled and will go into operation before the end of the year at International's present Peace Valley phosphate mine near Bartow. An order also has been placed for a

similar piece of equipment for the new operation at Bartow.

The dragline excavator now being assembled has a bucket capacity of 21 cubic yards, is operated from a 215 foot boom, and is mounted on a base having a diameter of 50 feet. Fifty-two freight cars were required to transport the excavator to its point of use in Florida from Milwaukee, Wisconsin, where it was manufactured.

## Plant Growth Indicated by Exploding Atoms

In order to determine the course of a mineral plant nutrient, such as phosphorus, from the soil, through the plant, to find out in what part—stem, leaves, or fruit—the mineral is used, and if possible for what purpose, the Department of Agriculture Experiment Station at Beltsville, Md., is using explosive atoms of phosphorus, similar in general principle to the atomic bomb.

Phosphorus is made radioactive in the cyclotron at the Carnegie Institute in Washington by bombarding it with ions of heavy hydrogen until several atoms of each 100,000 in the phosphorus become radioactive by the entrance of a neutron into the nucleus of the phosphorus atom. This increases the atomic weight from 31 to 32, the name "phosphorus 32" being given to these atoms.

While the chemical and physical properties are unchanged, the atom is unstable and eventually "blows up," ejecting a negative electron.

The radioactivity caused by the ejection of charged electrons enables soil and plant scientists to trace the course of phosphorus and other minerals through plants. A machine that registers the discharge of the electrons from the phosphorus 32 atoms is used to detect the presence of phosphorus containing such atoms. In this way, the passage of the irradiated phosphorus or other chemical can be traced through a plant which has taken it up from a soil or a solution to which it has been added, with far greater sensitivity than can be attained by the use of chemical methods. Frequent clicking of the machine indicates the presence of the charged atoms in the part of the plant held near the detector.

Possibly, at some future date, the farmer will be able to don his earphones and go out into the fields to hear what progress his corn and 'taters are making.



## THE AMERICAN FERTILIZER

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## Soil Testing Not Index to Fertilizer Needs

The chemist can tell how much plant food a soil contains but a soil analysis does not reveal how much plant food the plants can take from the soil. This is indicated in statements made in the Florida Agricultural Experiment Station's Press Bulletin 617, prepared by F. B. Smith and George D. Thornton, as follows:

"It is believed by many that from a chemical analysis of the soil one can tell what crops are best adapted, what fertilizers are needed and how much fertilizer to apply for most profitable returns. This is, to say the least, an over-estimation of the value of a chemical soil analysis. It is unfortunate that this misconception of such an important and indispensable tool of soil research exists in the public mind. Chemical soil analysis is of great value for certain purposes, but the fertilizer requirements of the soil are best determined by field experiments conducted over a period of years on specific soil types."

The bulletin states that soil analysis is valuable for determining lime requirements but adds: "One should be careful in applying lime as there is danger of injury from applying too much. Because of the danger of over-liming, especially on sandy soils, one should never apply lime without first testing the soil to see if lime is needed and how much to apply."

Further the bulletin says of soil analysis and available plant nutrients the following:

"A complete analysis of the soil, valuable as it is for its characterization, is of little value in making fertilizer recommendations. It is necessary to know the total mineral content of a soil in order to characterize its potential capabilities but this analysis does not indicate the amount of mineral elements available to the plant. Many attempts have been made to devise methods which would extract from the soil just the amount of elements which the plant is able to use, but these methods have not always been uniformly successful. Even if they were, it would not show how much nor what kind of fertilizer to apply. It is for these reasons that a soil chemical test alone cannot be used as a basis for fertilizer recommendations. There are, however, instances of crop failure or below normal plant growth which cannot be accounted for by any condition such as too much or too little moisture, insect or plant disease infestation or other causes in which a chemical soil analysis



might reveal one or more plant nutrient deficiencies, toxic excesses or other unsuspected factors. In such cases a chemical soil test may be extremely useful in diagnosing soil conditions."

### New England Recommends War-time Fertilizer Grades

Fertilizer grades that were permitted to be manufactured during 1945 under the War Food Administration will be exclusively recommended for 1946 by New England agronomists, although wartime restrictions were recently removed and the way opened to renewal of the pre-war manufacture of 65 different grades.

"The twelve wartime grades are sufficient to meet all New England needs," says J. Stanley Owens, agronomist of the Agricultural Extension Service, University of Connecticut. "Moreover, restriction of the market demand to these grades will allow manufacturers to process a greater amount of fertilizer through their plants at lower costs, thus benefiting the farmer."

### Dr. William H. Ross Retires

Dr. William H. Ross, Principal Chemist, Division of Soils, Fertilizers and Irrigation, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, who undoubtedly has contributed more to the chemistry and manufacturing processes of fertilizers than any living man, retired from active service with the Bureau on December 31st, after 33 years' service. A dinner in his honor on December 27th was attended by some 30 of his associates in the Bureau and technical men of the fertilizer industry. A bound volume of letters from his fellow workers in the industry and in the Government, containing also a list of 151 of his publications, was presented to Dr. Ross at the dinner.

### Fertilizer Raises Shelling Percentage of Corn

Four fertilizer demonstrations conducted in 1944 and 1945 showed that fertilizer on corn land brings about a definite increase in shelling percentage of the crop and a boost in yield. This is the report of Arnold W. Klemme of the University of Missouri College of Agriculture.

The shelling percentage moved up from a

mark of 79 per cent on the unfertilized plots to 83 per cent on the fertilized ones, making a net gain of 4 per cent. This would mean that a 1,000-bushel crib of ear corn grown on fertilized soil would shell out about 40 bushels more corn than a similar crop of corn from non-fertilized land.

A probable explanation of this increase, says Mr. Klemme, is that untreated soil may have sufficient fertility to meet the needs for the vegetative growth of the plant including cob growth, but such soils often do not have enough fertility to form grain fully, the grain being manufactured last.

The tests, run on four different soils using the same hybrid in each, also showed an average increase in yield of 14 bushels of ear corn per acre where fertilizer was used.

### Penn Salt Names Two New Agricultural Sales Managers

J. G. Brunton has been named Eastern Sales Manager and J. F. Francis has been named Western Sales Manager of the Agricultural Chemicals Division of Pennsylvania Salt Manufacturing Company. Both Mr. Brunton and Mr. Francis have been serving as assistant sales managers in their respective territories.

Mr. Brunton, a graduate entomologist of the University of California, joined the company in 1939. Mr. Francis, a graduate entomologist of the same university, came with Penn Salt in 1943.

### Sulphur Production in October

Production of native sulphur in the United States remained high in October, according to the Bureau of Mines, United States Department of the Interior. Mine shipments, however, continued to decline from the industry's record of 457,970 long tons set in July, 1945, and were the lowest since 1943. Stocks accordingly were the highest in several months.

Production, mine shipments and producers' stocks in long tons:

Period	Production	Mine Shipments	Producers' Stocks
October, 1945.....	348,365	220,131	3,858,728
September, 1945....	341,060	256,317	3,682,511
October, 1944.....	312,060	333,329	4,110,395
September, 1944...	293,963	327,155	4,140,976
Monthly average, 1945 (10 months)...	309,761	339,722	.....
Monthly average, 1944 (10 months)...	268,180	293,249	.....

## Hot Time in an Arkansas Spa

By ERNEST ROGERS  
of the "Atlanta Journal"

*EDITOR'S NOTE—A short time ago in Ernest Rogers' column in the "Atlanta Journal" appeared an account of an adventure by J. O. Sanders, well-known executive of the Fulton Bag and Cotton Mills, into the rites and mysteries of an Arkansas spa. We feel that Mr. Sanders' many friends in the industry will be interested in his experiences.*

James O'Hear Sanders, the textile executive, recently took a trip West and on his way back to Atlanta stopped a few days in Hot Springs, Ark., to sample the baths. Never having been in Hot Springs and, consequently, never having enjoyed the sizzling showers, I asked Mr. Sanders about his experience. He winced, slightly, at the recollection but recounted how he surrendered himself to a Negro attendant named Albert and was led to the tubbing department.

"The temperature in the tub was not uncomfortable at first," Mr. Sanders recalled, "and I reclined happily to admire the voluptuous contours of a group of mermaids done in stained glass on the roof. This was a nice touch designed, no doubt, to take the victim's mind off the heat and create an atmosphere of Roman luxury.

"After 10 minutes of this contemplation even the most curvesome mermaids couldn't overcome the consciousness that the water was getting hot. Whether this was cumulative heat, or Albert was slyly turning some valve outside, I never knew, but I was unmistakably being cooked. At intervals Albert appeared and basted me like a roasting duck. The mermaids swam in a fiery lake. Twenty minutes more of stewing left me in a state of resentment that welcomed the thought of

universal destruction by atomic bomb. No doubt Pearl Harbor was cooked up at similar temperature in a Japanese bathhouse.

### "Cooling" Room

"Albert finally relented and led me red and gasping to showers somewhat less fiery, thence to what they laughingly called a 'cooling room.' The only thing cool about this place was a sign: 'Sheets frozen; please limit yourself to two.' They wrapped me mummy-like in a sheet and left me to drain on a metal couch. When my temperature receded to around 102 degrees Albert appeared with a tall glass filled with—you guessed it—hot water. I had three of these Plutonian high-balls and was left in a sort of dripping coma."

Mr. Sanders' brow became moist at the recollection.

"And that was all there was to it, eh?" I asked.

Mr. Sanders withered me with a glance.

"No!" he replied, sternly. "Some 40 minutes later I was delivered to the massage room and into the hands of a towering, bearded Swede. He was an affable fellow with a disarming gentleness of manner. I climbed warily onto the padded table, resigned to having the living daylights pounded out of my charred remains.

"In this I was not disappointed, either.

### Begins Mildly

"He began, mildly enough, anointing me with so much oil that I felt I should hand him 10 red points. After this buttering up, he got going in earnest, kneading and thumping my carcass with the rhythm of an expert shoe shine boy.

"Hardly missing a stroke, he switched to alcohol and began a series of intricate twisting and rotating of fingers, toes, arms and legs. I was compressed and unfolded like an ac-

(Continued on page 28)

## BRADLEY & BAKER

FERTILIZER MATERIALS - FEEDSTUFFS

AGENTS - IMPORTERS - BROKERS

155 E. 44th Street  
NEW YORK

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Baltimore, Md.

BRANCHES  
505 Royster Building  
Norfolk, Va.

Barnett Bank Building  
Jacksonville, Fla.

504 Merchants Exchange Bldg., St. Louis, Mo.

## FERTILIZER MATERIALS MARKET

### NEW YORK

**Steel Strike Threatens Sulphate of Ammonia Supply for Rest of Season. Less Nitrate of Soda Expected. Organics at Ceiling Prices. Superphosphate and Potash Markets Sold to Capacity.**

*Exclusive Correspondence to "The American Fertilizer"*

NEW YORK, January 10, 1946.

#### **Sulphate of Ammonia**

The shadow of the proposed steel strike, to start January 14th, hangs heavy over the sulphate of ammonia market. Even now producers are behind on contract deliveries. If the steelworkers go out, production of coke and its by-products will drop to only a fraction of its normal output. It looks as if ammonium nitrate and nitrogen solutions will have to fill in the gap as best they can.

#### **Nitrate of Soda**

It is expected that the supplies of nitrate of soda available for the current season will be about 25 per cent less than last year. Supplies on hand have been able to take care of current orders which are increasing in response to the Department of Agriculture's recommendation for early buying.

#### **Organic Materials**

The feed industry is still dominant in the organic materials market. There has been some improvement in supply but not nearly enough to meet the accumulated demand. Ceiling prices prevail and while these are out of line for fertilizer production, some fertilizer manufacturers have placed orders at ceiling but with little success.

#### **Superphosphate**

The tight situation in superphosphate is increasing as the demands from mixers are showing their normal seasonal increases. While acidulators are increasing production, they are still handicapped by labor shortage. Concentrated super is still in much greater demand than can be supplied and stocks on hand of both normal and concentrated are at a minimum.

#### **Phosphate Rock**

Producers are continuing to work under pressure as the demand from acidulators and from foreign buyers persists. Production in

the North African field has been below expectations and the European market is looking to this country for larger shipments. Some mining companies are handicapped by transportation difficulties and labor shortage in keeping shipments up to schedule.

#### **Potash**

Producers are hopeful of equaling last year's record output but are hindered by problems of fuel, manpower and maintenance. Current production is completely sold and no surplus or resale material is on the market.

### CHARLESTON

**New Terminal Completed. Feed Market Taking All Organic Materials. Less Nitrate of Soda Probable. Phosphate Rock Sold Up.**

*Exclusive Correspondence to "The American Fertilizer"*

CHARLESTON, January 8, 1946.

The up-to-date plant of the Shipyard River Terminals, recently rebuilt after the destructive fire several months ago, has just received its first cargo of Chilean nitrate of soda.

*Organics.*—No change has developed in this situation as the insistent demand of the feed manufacturers has taken all offerings of blood, bone meal, fish meal, etc.


*Castor Pomace.*—No additional amount of this on the market. The smaller production of castor oil has meant that the output of castor pomace has been reduced below the quantity that could be used as fertilizer.

*Nitrate of Soda.*—The present expectation is that the importation for this season will be about 300,000 tons less than last season, due to heavy shipments to Europe and Egypt. Though the production of synthetic nitrogen may be increased a little, the combined total is estimated to be 20 to 25 per cent less.

*Phosphate Rock.*—Production for the first half of 1945 was increased nearly 200,000 tons above 1944. The phosphate rock producers continue closely sold up.

*Producers of*  
**SULPHUR**

**Large stocks carried at all times, permitting prompt shipments . . . Uniformly high purity of 99½% or better . . . Free of arsenic, selenium and tellurium.**

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Mine: Newgulf, Texas  
**INC.**

## CHICAGO

**Dull Fertilizer Organics Market May Improve before Fall. Strike Would Affect Feed Material Supply.**

CHICAGO, January 7, 1946.

The organic market is dull as the result of complete lack of offerings from producers in this area. Some of the trade express belief that such conditions will change before the fall season, while others are less optimistic.

In feeds, the threatened strike of packing house workers caused increased livestock receipts, but demand and back orders were such as to prevent any accumulations of feed materials. Ceiling prices were easily maintained.

Ceiling prices are:

High grade ground fertilizer tankage, \$3.85 to \$4.00 (\$4.68 to \$4.86 per unit N) and 10 cents; standard grades crushed feeding tankage, \$5.53 per unit ammonia (\$6.72 per unit N); blood, \$5.53 (\$6.72 per unit N); dry rendered tankage, \$1.25 per unit of protein, f. o. b. producing points.

## Union Special Announces Return of Rosenquist and Moore

Appointment of Lieutenant Commander Clarence L. Rosenquist and Major Don R. Moore as assistant managers of the Cincinnati and St. Louis offices of the Union Special Machine Company is announced by T. S. Whitsel, general sales manager of the Union Special Machine Company. Both men have returned recently to the company after leaves of absence spent in the armed services.

### Commander Rosenquist

Commander Rosenquist entered the Navy to assist in its purchasing program. He was commissioned a Lieutenant (j.g.) in September,

1942, and assigned to the Bureau of Supplies and Accounts in Washington as a clothing Purchasing Officer. His experience and many friends in the sewing industry made it possible for him to provide valuable assistance in the development of the Navy's clothing purchasing program, both in purchasing and in being helpful to manufacturers supplying the Navy. Just a little over a year later he was promoted to Lieutenant.

After Washington, he was assigned to the Brooklyn Naval Clothing Depot as Officer in Charge of Specifications, to prepare new specifications and also revise those which did not conform with good manufacturing practice. His accumulated practical experience, coupled with the knowledge of the Navy's requirements gained as clothing purchasing officer, worked out well in developing and revising well over 100 of the Navy's clothing specifications.

Shortly after V-E Day, he was appointed to the Textile Industrial Intelligence Service, working with Captain James L. Truslow, for the purpose of investigating any developments which might have been made in German sewing machinery and sewing production methods. Advantageously, Lieutenant P. Huber Hanes, Jr., was assigned to the same committee for the purpose of investigating circular knitting machinery and developments; so these friends were able to conduct their investigations and visited German factories as a team. On Rosenquist's recommendation, Albert Krieger, sales manager of the Union Special Maschinfabrik located in Stuttgart, was cleared by military intelligence and subsequently performed useful services as guide and interpreter for Hanes and Rosenquist, and other textile investigators. As a result of his service and work on the Textile Committee, Clarence was promoted to Lieutenant Commander.

(Continued on page 24)

Manufacturers' Sales Agents for **DOMESTIC**

**Sulphate of Ammonia**

Ammonia Liquor

::

Anhydrous Ammonia

**HYDROCARBON PRODUCTS CO., INC.**

500 Fifth Avenue, New York



## November Sulphate of Ammonia

During November, the production of by-product sulphate of ammonia recovered from the slump recorded during October, according to the figures compiled by the U. S. Bureau of Mines. The output increased to 59,726 tons, a rise of 21 per cent over October. This, however, is still 13 per cent under November, 1944, production of 67,430 tons. Production for the first 11 months of the year amounted to 699,819 tons which is 7 per cent under the same period of 1944. Sales during November were approximately equivalent to those of October but stocks on hand at the end of the month totaled only 26,000 tons which is only about a third as much as was available for shipment on November 30, 1944.

	Sulphate of Ammonia Ammonia Liquor	
	Tons	Tons NH <sub>3</sub>
Production		
November, 1945.....	59,726	2,221
October, 1945.....	49,298	1,996
November, 1944.....	67,430	2,524
January-November, 1945...	699,819	25,294
January-November, 1944...	748,909	29,099
Sales		
November, 1945.....	56,672	2,131
October, 1945.....	52,843	1,918
November, 1944.....	72,939	2,383
January-November, 1945...	743,286	23,578
January-November, 1944...	705,716	27,774
Stocks on Hand		
November 30, 1945.....	26,004	852
October 31, 1945.....	22,848	916
November 30, 1944.....	71,260	676

## Rhoden of Chase Bag to Visit India

Ferdinand H. Rhoden, head of burlap purchasing for the Chase Bag Company, will leave for Calcutta, by Pan-American Clipper, the first week in January. He expects to spend a month in India, talking with the mills and investigating current jute and burlap conditions. On his return, he will stop by London and Dundee.

Mr. Rhoden is widely known throughout the burlap trade in this country for his work on the War Production Board as executor of Burlap Order M-47. He joined Chase Bag Company in May, 1944, to handle burlap purchasing.

Prior to joining WPB, he was associated with Ludlow Manufacturing and Sales Company and before that was manager of the East India Department of W. R. Grace Company.

**CASE HISTORY No. 1**  
No. 1 in a series of factual experiences of a group of American manufacturers with Multiwall Paper Bags.

## COST COMPARISON

	200 lb. Barrels	150 lb. Jute Bags	100 lb. Paper Bags
Container Cost	1.20	.31	.13
Container Cost Per 100 lbs.	.60	.207	.13
Labor Cost	.0250	.0250	.0125
TOTAL COST Per 100 lbs.	.6250	.2320	.1425

## CLASS OF PRODUCT PACKED

CEMENT	FERTILIZER
CHEMICALS	FOOD ✓
FEEDSTUFFS	MISCELLANEOUS

## PRODUCT CHARACTERISTICS

ABRASIVE	GRANULAR
CORROSIVE	HEAVY
DELIQUESCENT	HYGROSCOPIC
FLUFFY ✓	LIGHT ✓
FREE-FLOWING	VISCOUS

**ST. REGIS BAG PACKAGING SYSTEMS** are made in a variety of capacities, speeds, and manpower requirements to suit specific products and plant layouts. Machines are available in types to meet the special characteristics of a wide range of products, with filling speeds as high as twenty-four 100-lb. bags per minute — with one operator.

# How **MULTIWALLS** *doubled* **PACKAGING PRODUCTION** and halved packaging costs!

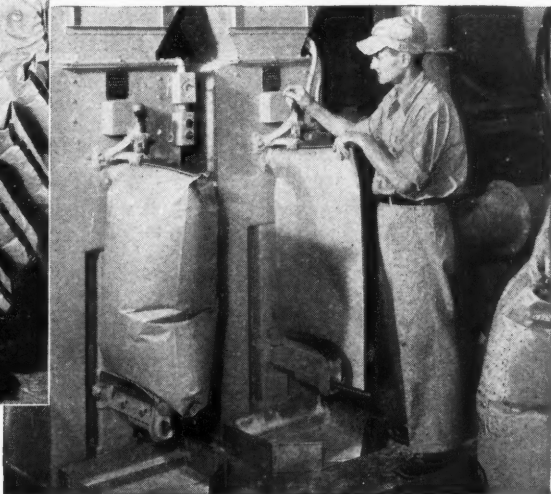
Before this company switched to Multiwall Paper Bags, they were using barrels and jute bags. Three men were needed to fill and weigh these cumbersome containers. These three men were also required for the closing operations. Labor costs were high, while production seldom exceeded 9,000 lbs. per hour. But, after the installation of Multiwall Bagging Machines, it was found that one man

could operate 2 filling machines while two other men checked and stacked the bags. This streamline operation results in the packaging of 18,000 lbs. per hour.

In addition, tight, siftproof Multiwalls overcame problems resulting from siftage, dampness, and infestation. And the compact storage of empty bags provided a substantial saving in valuable floor space.



*Left: These 3 men pack, check, and stack 18,000 lbs. per hour in Multiwall Valve Bags. Below: Showing the tandem machine arrangement of the St. Regis machines which enables one man to do the bag-filling job.*



## **MULTIWALL**

**ST. REGIS PAPER COMPANY**

TAGGART CORPORATION

NEW YORK 17: 230 Park Ave.

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*I am interested* in learning more about the economies of Multiwall Paper Bags. Please send me complete details concerning the "Case History" outlined above.

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Franklin, Va. Los Angeles Nazareth, Pa.  
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St. Regis Paper Co. (Can.) Ltd., Montreal, Vancouver.

### Hybrid Corn Needs More Plant Food

Do the higher yielding corn hybrids deplete the soil faster than the old open-pollinated varieties? The answer obviously is "yes" when the problem is considered from an acre basis. Ten bushels extra of shelled corn per acre remove nine pounds of nitrogen, four pounds of phosphoric acid, and three pounds of potash in the grain alone. The culture of all clean-cultivated row crops is accompanied by the loss of soil organic matter, the deterioration of soil structure, and the exposing of the land to other soil-depleting processes such as erosion and leaching. Changing from open-pollinated to hybrid corn has no significant influence on these processes one way or another. Corn, like other row crops, is a soil-depleting crop; therefore, the effects of this crop must be offset by soil-building practices if productivity is to be maintained.

Looking at the problem either from the entire farm or from a state-wide basis, however, the development and use of hybrid corn have made possible the production of the same total amount of corn on about one-sixth less acreage. The Ohio Experiment Station Agronomists point out therefore that the advent of hybrid corn has made an effective contribution toward conservation by making it much easier for a farmer to adopt a soil conservation program on his farm. Corn needs can be satisfied on fewer acres, thereby making it possible to keep more acres in soil-conserving sod crops.

Hybrid corn should be grown in good rotations, preferably following legume-grass sod crops. Fertilization rates should be increased. On sloping lands contour cultivation, strip cropping, and, in some cases, terracing should be used to control erosion losses from the land.—*Ohio Agricultural Experiment Station Bulletin.*

### Plowing Down Additional Fertilizer Raises Ohio Corn Yields

Field studies made in Ohio's best corn growing section by E. P. Reed, extension agronomist, Ohio State University, have convinced him that it is impossible to apply enough fertilizer in the hill or row to get maximum corn yields and that additional fertilizer plowed under is a profitable investment for corn producers.

The trials were made on many soil types and a marked response to plowed under fertilizer was observed on all those soils. The effect of plowing down nitrogen was compared with plowing down an 8-8-8 fertilizer. In both cases, the fertilizer plowed down was in addition to a normal application in the row.

Mr. Reed says the yield increases obtained were approximately the same for nitrogen and for 8-8-8 when both of them were used at the 50-pound per acre nitrogen level. As the yield increases were the same, the immediate profit from applying nitrogen was greater because it cost less than the equivalent amount 8-8-8, but Mr. Reed suggests that the 8-8-8 may produce more residual benefits to the soil than the nitrogen does.

The increases in yield were obtained on good soils as well as on soils lower in productivity, but maximum yields cannot be produced unless enough seed is planted to get a stand of from 12,000 to 14,000 corn plants per acre. The results of plowing down fertilizer for corn also are affected by the amount of rainfall because the additional plant food is not available to the plants in periods of drought.

The best corn yield obtained in the 1945 trials was 127.7 bushels per acre on a field which had 14,155 corn plants per acre. The average increase from plowing down nitrogen was 11.6 bushels per acre and from 8-8-8 was 12.1 bushels per acre.



Trade Mark Registered

## MAGNESIUM LIMESTONE

"It's a Dolomite"

American Limestone Company

Knoxville, Tenn.

# Southern Phosphate Corporation

## Domestic Prices for Phosphate Rock For the Calendar Year 1946

Basis Gross Ton—F. O. B. Ridgewood, Florida

Run of Mine—Dried

Grade	Base Price	BPL Rise	BPL Fall
68/66%	\$2.20 basis 68%	10c per unit to 70%	10c per unit to 64%
70/68%	\$2.60 basis 70%	10c per unit to 72%	20c per unit to 68%
72/70%	\$3.20 basis 72%	15c per unit to 74%	30c per unit to 70%
75/74%	\$4.20 basis 75%	20c per unit to 76%	40c per unit to 74%
77/76%	\$5.20 basis 77%	25c per unit to 81%	50c per unit to 76%

Guaranteed 3% maximum moisture, 4% maximum iron and aluminum.  
Excess I & A above 4% adjusted on basis of 2 units BPL for 1 unit I & A.  
Moisture in excess of 3% to be deducted from weight.

### GROUND ROCK FOR ACIDULATION

Add to base prices 45 cents per gross ton for grinding 48/52%—200 mesh.  
Add to base prices 55 cents per gross ton for grinding 58/62%—200 mesh.

### CAR DOOR BOARDS

\$2.50 per car for car door boards.

### FUEL OIL CLAUSE

For each variation of 10 cents per barrel of 42 gallons of fuel oil above or below the price of \$1.25 f. o. b. cars at Tampa, Florida, used by seller during month of shipment, the base price per ton of rock shipped shall increase or decrease 5 cents, fractions in proportion.

Above fuel oil clause will be operative only if variation in price per barrel of oil exceeds 25 cents up or down from \$1.25.

### LABOR CLAUSE

For each 5 cents per hour variation in the average hourly wage rate for common process labor paid at seller's phosphate rock mines above or below 55 cents by seller during month of shipment, the base price of phosphate rock shall be increased or decreased 15 cents per ton, fractions in proportion.

The foregoing quotations are subject to change without notice.

Purchase orders upon the basis of the foregoing prices are subject to negotiation and acceptance or rejection by this Corporation in its sole discretion.

In no case will any clause operate to bring contract prices above ceiling price set by the O.P.A.

#### SALES OFFICE

342 Madison Avenue, New York 17, N. Y.

#### HOME OFFICE

Bartow, Florida

### Secretary Anderson Cites Profits from Fertilizers on Corn

In a talk before a group of farmers and farm leaders at North Carolina State College, Raleigh, on January 4th, Secretary of Agriculture Clinton P. Anderson had this to say about the results of fertilizer use on North Carolina corn: "The country has heard a great deal about the march of powerful, high-yielding hybrids through the Midwestern Corn Belt, making it possible to produce five ears of corn where only four grew before. Hybrids are coming to the South, too—and along with them new knowledge of fertilizer. The result, we know from actual tests, is potential production of this feed and food crop on a scale never dreamed of only a few years ago. Across my desk have come reports of experiments on ordinary farms, under actual farm conditions, in which the use of especially adapted hybrid strains, plus lavish use of nitrogen fertilizer, plus good farming methods, boosted the yield of corn from 19 bushels to 107 bushels per acre! Each additional pound of nitrogen—costing about 12 cents—produced an extra bushel of corn. No wonder the officials of your State Experiment Station are confident that the average yield of corn in North Carolina can be doubled in the next 10 years."


### Jones Appointed Chase Manager at Memphis

Tom L. Jones has been appointed manager of the Memphis, Tenn., office of the Chase Bag Company, according to an announcement made by R. N. Conners, Vice-President and General Sales Manager of the company in Chicago.

Prior to his Memphis appointment, Mr. Jones was located in Columbus, Ohio, and is well known in Ohio feed and produce circles.

### Victor Chemical to Build New Florida Plant

The Victor Chemical Works has announced that it is acquiring land in western Florida for the erection of a plant to produce elemental phosphorus. This new furnace plant, which will cost about \$2,000,000, will be electrically operated and controlled. The new branch of the company's manufacturing facilities will be on tidewater, adjacent to the rich Florida phosphate fields. According to Walter B. Brown, executive vice-president, long-range plans call for quadrupling the plant's capacity as markets increase.



**MIXED FERTILIZERS**

**SUPERPHOSPHATES**

**TRIPLE SUPERPHOSPHATE**

**PHOSPHATE ROCK**

**SULPHURIC ACID**

**PHOSPHORIC ACID**

**CALCIUM PHOSPHATES**

**MONOCALCIUM PHOSPHATE**

**SODIUM PHOSPHATES**

**TRISODIUM PHOSPHATE**

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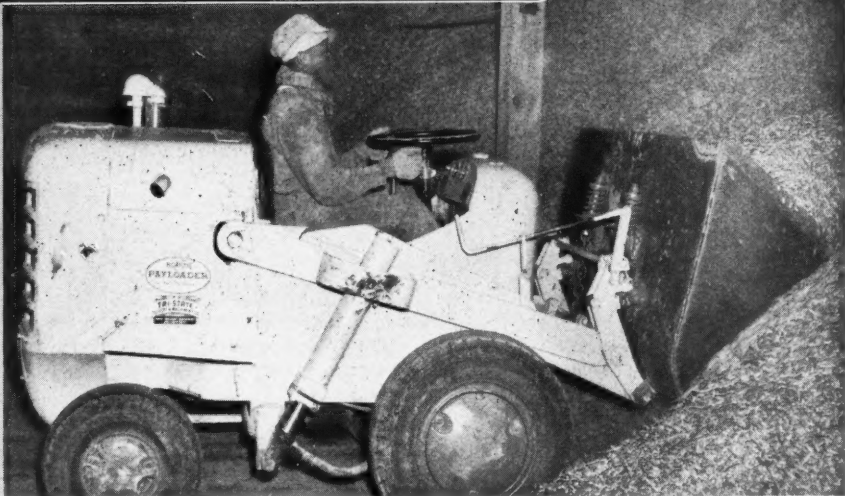
**BURLAP AND COTTON BAGS**

**VIRGINIA-CAROLINA  
CHEMICAL CORPORATION**

HOME OFFICE: RICHMOND, VA.



## A High Capacity Vest Pocket Loader



The Hough Model "HA" Payloader completely fulfills the need of the fertilizer industry for a compact, readily maneuverable loader for handling bulk materials economically. The "HA" Payloader is the result of many years of development work and exhaustive operating tests. It has already proved itself in nearly a hundred fertilizer plants.

Maneuverability reaches a new high with this unit. It loads and operates with ease and thoroughness in and out of a box car, the overall width is only 49", the wheel base 48½" and the turning radius only 6'6". One man with the "HA" Payloader loads bulk material, carries it 100 feet and dumps it at a rate of 25 to 50 tons per hour. It will do the work of 8 to 10 men.

The "HA" Payloader is a rugged powerful tractor unit—not an attachment for a tractor. Power is furnished by a heavy duty 4 cylinder 29 H.P. engine. Two speeds forward and two reverse provide ample flexibility and speed of movement. The bucket is hydraulically actuated by twin cylinders and has the exclusive tip-back feature which prevents spillage.

The Model "HA" Payloader is the material handling unit you have been waiting for. There are over 3500 Hough Loaders in service.

*Write for full information.*

*We have a Distributor near you.*



**THE FRANK G. HOUGH CO.**  
Libertyville, Illinois . "Since 1920"

# HOUGH Payloader SHOVELS

**UNION SPECIAL OFFICERS RETURN**

(Continued from page 17)

**Major Moore**

Major Moore entered the service in August, 1941, as First Lieutenant, in the Engineering Division of the Quartermaster's Depot at Jeffersonville, Ind., where he was assigned as Executive Officer. His duties there consisted of research and development work on heavy canvas, tentage, and equipage purchased by the Quartermaster. He remained in that position for 18 months. He received his appointment as Captain in February of 1942, and was made a Major in November of the same year. Later, he was appointed Officer in Charge of the Engineering Division at Jeffersonville.

**Ware Reviews Year's Advance**

In a year-ending statement, Louis Ware, president of International Minerals & Chemical Corporation, said that mechanization, research and the intelligent use of plant foods made it possible for 7,000,000 fewer American farmers than there were 10 years ago to produce approximately 25 per cent more food-stuffs annually during the war years. Yet, he believes farmers need have no fear of overproduction in peacetime if present employment levels are maintained.

Concerned with the welfare of the nation's farmers because his firm is the world's largest miner of phosphate, a dominant factor in American potash production, and a manufacturer of fertilizer and other mineral and chemical products such as the amino acids, including mono sodium glutamate, Mr. Ware warned against the "theory of scarcity." The war proved the world can consume every item the farmer can raise, he pointed out, but it will take a sound economy in our own country to help insure the ability of the rest of the world to purchase its needs.

As an example of how the use of fertilizer has enabled farmers to increase production, Mr. Ware pointed out that in 1943 American farmers produced 513,322,000 bushels more corn than in 1929—and on 3,350,000 fewer

acres. At the same time, the percentage of the country's corn crop which was fertilized rose from 15 per cent in 1929 to 23 per cent in 1943.

Pointing to the current and wartime rise in dietary standards, Mr. Ware said everything possible must be done to insure maximum employment so these standards can be maintained.

**Karl C. Hamner to Head U. S. D. A. Laboratory at Ithaca**

Appointment of Dr. Karl C. Hamner as director of the U. S. Department of Agriculture Plant, Soil, and Nutrition Laboratory at Ithaca, N. Y., has been announced by P. V. Cardon, administrator of the Agricultural Research Administration.

Dr. Hamner succeeds Dr. L. A. Maynard, who has been director of the laboratory since it was established in 1939. Dr. Maynard will return to Cornell University, where he will devote his time to enlarged duties in the field of nutrition. He also will continue his relations with the laboratory as a consultant in the field of animal and human nutrition.

Dr. Hamner has been on the staff of the laboratory since its beginning and has participated in the development of its program. At the same time he served as an associate professor of plant physiology at Cornell University. He received his B.S. degree at the University of California in 1931 and his Doctor's degree from the University of Chicago in 1935. He was employed in the Bureau of Plant Industry from 1935 to 1940, when he joined the staff of the laboratory.

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### Fertilizer Doubles Tobacco Yields

County Agent Charles Shouse says that more than fifty Powell County farmers doubled tobacco yields by using 1,500 to 2,000 pounds of fertilizer to the acre. None of them ever used more than 400 pounds before. Many of them told Shouse they expect to use a ton of commercial fertilizer to the acre next season.—*Kentucky Extension Service.*

### More Fertilizer Shows Greater Corn Profits in N. C.

The results gained by 11 Edgecombe County farmers in recent corn growing tests involving the use of North Carolina Extension Service practices are "just like money in the bank," according to H. C. Scott, assistant Edgecombe County Agent.

Using "old" methods of production on one acre of corn, the farmers participating in the demonstration counted 39.3 bushels when the test was finished as compared with 65 bushels gleaned from the second test acre on which Extension Service practices were followed.

While the cost of getting the bigger corn yield was about 42 per cent greater overall, the production cost per bushel was 16.4 per cent less.

A comparison of the amounts of fertilizer and topdressing used on the two plots in the demonstration shows that while the greater amounts used on the high-yield acre seem hard to offset on paper, the fact remains that total profit for the 65-bushel acre was 83.2

per cent larger. The low-yield acre got 140 pounds of fertilizer and was dressed with 227 pounds of nitrate of soda; the high-yield plot was treated with 412 pounds of fertilizer and 500 pounds of nitrate of soda.

### Nitrogen Top-Dressing Improves Arkansas Tomato Yield

Northwest Arkansas farmers can profitably grow tomatoes for canning if they follow instructions in Extension Circular No. 428, "Growing Tomatoes in Arkansas," according to Elmer Brown, Mt. Sherman community, Newton County.

"Mr. Brown conducted a result fertilizer demonstration with his four-acre tomato project," says County Agent W. H. Freyaldenhoven. The four-acre field was planted to the Rutgers variety. It was cultivated and transplanted according to recommendations of the Extension Service, University of Arkansas College of Agriculture.

A 4-12-4 commercial fertilizer was applied at the rate of 900 pounds per acre prior to transplanting. When the plants were about knee high, a one-acre strip through the center of the field was side-dressed with 100 pounds of nitrate of soda per acre.

The acre, which was side-dressed with nitrate fertilizer, more than doubled the yield of tomatoes which did not receive nitrate. In addition to an increased yield by side-dressing with nitrate of soda, the quality and size of the tomatoes were improved, said Mr. Brown.

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See Page 4





### Fertilizer Brings Profit on Kentucky Corn

Figuring 6-8-6 commercial fertilizer worth \$37.30 a ton, Hillman Collier of Fulton County, Kentucky, received \$22 profit for every ton used in corn growing, according to his report to County Agent J. Homer Miller. He put 1,000 pounds of 6-8-6 in the furrow and used 200 pounds in the drill. With stalks 12 inches apart in the row and rows  $3\frac{1}{2}$  feet apart, the yield was 87 bushels to the acre.

### HOT TIME IN AN ARKANSAS SPA

(Continued from page 14)

cordion, spun around, jerked, and otherwise mauled until the masseur's long mustaches seemed like the whiskers of a giant cat toying with a human mouse.

"All this led crescendo to a final assault that he called 'stretching the spine.' I don't know yet what actually happened, but I was made to put my hands behind my head while he got a wrestler's hold on my neck and lifted me up into space, my backbone creaking in protest. This was the climax of his attentions and I found myself being bowed out of the room trying to think of some snappy comeback to his cheerful 'See you tomorrow.'"

### What of Profit

I had listened to Mr. Sanders' account of his experience with interest.

"And did you profit from this ordeal by fire?" I asked.

"Yes," was his warm reply. "I have re-

newed confidence in my endurance. I have a resistance to heat comparable to that of the salamander. No longer shall I dread the torrid temperatures of summer—they have lost their sting. I . . ."

Mr. Sanders fingered his neck gingerly.

"Something amiss?" I inquired.

"No," he replied thoughtfully. "But I check once in a while to make certain my head is still joined to the remainder of my body. That Swede, you know, does a thorough job of stretching the spine."

### WHAT IS THE BEST METHOD OF APPLYING FERTILIZER?

(Continued from page 10)

Dr. Thompson feels that when as good results are obtained with a small amount of fertilizer applied in bands as when larger amounts are applied in some other method either the rate was low, or the soil had a high-fixing capacity for P and K, or both, and he contends that in cases where large amounts of fertilizer are needed they are needed regardless of the methods used to apply this fertilizer.

When part of the fertilizer was placed in the furrow and the remainder applied in bands, the results were favorable in more cases than with any other method—in eight out of 16 tests this method gave the best results. This method is preferred on fairly heavy soils, and the proportion to be placed in the furrow depends on the crop to be grown, methods of cultivation, and soil type. With potatoes in Pennsylvania this method has proved very promising, and reports from other states would seem to indicate that it will apply to more crops and under more different conditions than any other method so far tested.

### Results of Drilling in Fertilizer

Drilling in the fertilizer three to four inches deep has given good results in many cases where several methods have been compared. It has proved best for peas in several states, for corn in New Jersey, for soybeans in several states, and seems the best method when large amounts of fertilizer are applied.

Among the prize-winners in the Pennsylvania Tomato Contest in 1943 in the three-



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acre-or-less class, the first three winners drilled in the fertilizer after plowing while in the seven-acre-or-more class two of the winners applied the fertilizer before plowing and one after plowing. Of the 977 growers in the contest, 263 drilled the fertilizer broadcast, 90 broadcast and side-dressed, and 67 applied the fertilizer broadcast and in the row. Thus the broadcast method alone or with some other method was followed by the largest proportion of growers. A yield on 75 acres of 14.86 tons per acre was obtained at the Starky Farms in 1941, the largest yield of tomatoes on such a large acreage. And with this large yield went quality, for this large crop graded 69 per cent No. 1's, 29 per cent No. 2's, and 2 per cent culls. In producing this large yield 200 lbs. of cyanamid were broadcast on cover crop with 1,000 lbs. of a 2-10-10 broadcast, and 150 lbs. of muriate of potash were applied after the plants were set. A starter solution was used and a 97 per cent stand was secured by this method.

Tests with tomatoes at Geneva, New York, in 1943 indicated that the method of applying part of the fertilizer in the furrow and part in bands was the best, but all or 800 lbs. of fertilizer applied in the bottom of the furrow was not as good as the five other methods tried. There was no significant difference between 600 lbs. of fertilizer broadcast and plowed under, 600 lbs. drilled deeply, 200 lbs. in bands, and 600 lbs. in bands. In this test a 5-20-5 analysis was used, but in another test where a 3-12-6 fertilizer was applied, although the combination of placing part of the fertilizer in the bottom of the furrow and the rest in bands gave the best results, there was no significant difference between this method and the one in which 1,200 lbs. of fertilizer were broadcast and plowed under or 1,200 lbs. in the furrow, or 1,200 lbs. disked after plowing. The first test was on Ontario

loam and the second on Palmyra stony loam—a pH of 7.2 and 6 respectively.

In other tests with tomatoes, fertilizer drilled four inches deep resulted in one and one-half tons more per acre than where the fertilizer was broadcast and disked, and the same amount was secured when the fertilizer was plowed under eight inches deep over broadcast and disked.

In a potato fertilizer test at the Philadelphia County Prison Farm, Torresdale, Pennsylvania, in 1942 on a timothy sod, a 4-12-12 fertilizer at the rate of 1,000 lbs. per acre was applied all in bands versus three-fourths plowed down with one-fourth in bands. An average of four replications showed a yield of 321 bushels per acre under the band method and 374 bushels with the combination of plowed down and band. Similar field tests in 1943-1944 have further confirmed the advantages of this method of fertilizing.

Although deep applications are quite generally recommended for heavy soils and shallow applications for light soils, it would seem that the combination of applying the fertilizer part in the furrow one-half to two-thirds of the total amount plowed under, and the rest in bands is the best bet to date under all conditions. This practice merits consideration especially for crops such as tomatoes and potatoes which ordinarily use in excess of 800 lbs. of fertilizer per acre. Less likelihood of fertilizer injury at planting time and assured supply of plant food in the lower part of the furrow in periods of suboptimum rainfall give to the practice a high insurance value.

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Huber & Company, New York City.  
International Minerals & Chemical Corporation, Chicago, Ill.  
Scar-Lipman & Co., Inc., Irvington, N. J.  
Schmaltz, Jos. H., Chicago, Ill.

### POTASH SALTS—Manufacturers

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Potash Co. of America, New York City.  
International Minerals & Chemical Corp., Chicago, Ill.  
United States Potash Co., New York City.

### PRINTING PRESSES—Bag

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Huber & Company, New York City.  
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Nitrogen Products, Inc., New York City  
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Schmaltz, Jos. H., Chicago, Ill.

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Texas Gulf Sulphur Co., New York City.  
Virginia-Carolina Chemical Corp., Richmond, Va.

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Huber & Company, New York City.  
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U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Virginia-Carolina Chemical Corp., Richmond, Va.

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Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, New York City.  
International Minerals & Chemical Corporation, Chicago, Ill.  
McIver & Son, Alex. M., Charleston, S. C.  
Scar-Lipman & Co., Inc., Irvington, N. J.  
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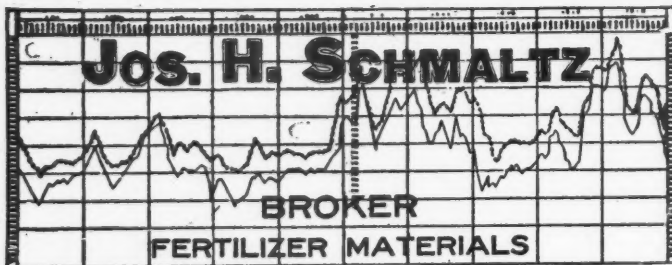
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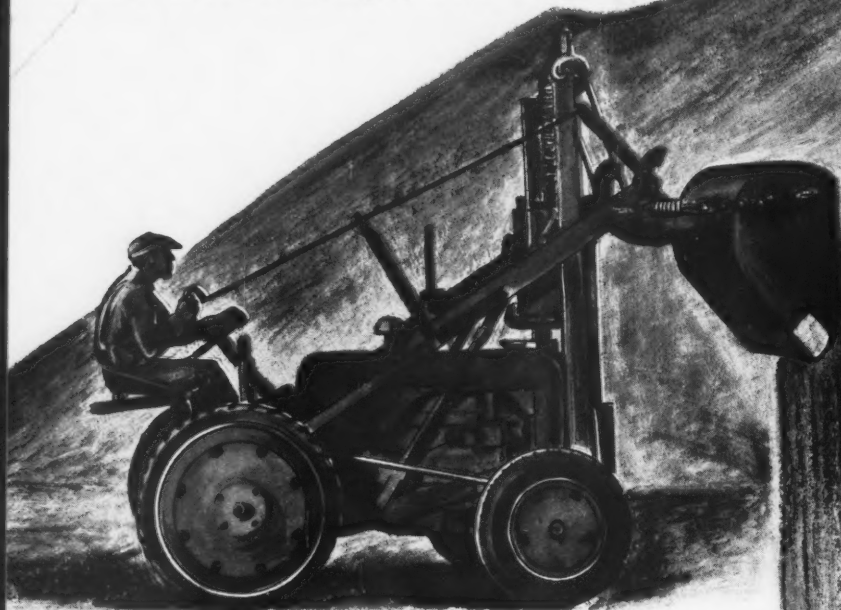
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